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CEBAMA

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Deliverable n°D4.18

Minutes from 4th Annual (Final) Workshop

Editors: Alba Valls, Lara Duro (AMPHOS21)

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Project co-funded by the European Commission under the Euratom Research and Training Programme on Nuclear Energy within the Horizon 2020 Framework Programme		
Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the partners of the CEBAMA project	
CO	Confidential, only for partners of the CEBAMA project	

ABSTRACT:

The 4th Annual Workshop of Cebama, which is the Final Workshop of the project, was held in Karlsruhe (Germany) on March 28th + 29th 2019. The workshop was hosted by the project Coordinator (KIT-INE). There were 66 attendees, including beneficiaries, End-User-Group members, AG representatives and other external experts.

The workshop was organized during two days, in connection to the 5th International Workshop on “Mechanisms and Modelling of Waste/Cement Interactions”. In this way, detailed scientific highlights of the research within CEBAMA were presented in the preceding workshop, maximizing impact and dissemination of CEBAMA results, while the Final Project workshop presented an integrated perspective of the project results and its closure.

The Final Workshop also included the ExCom and EUG meetings and the General Assembly. The minutes of these meetings are prepared in separate documents which are available at the intranet of the CEBAMA project.

The main scientific outcome of the workshop will be reported in the Final Workshop Proceedings which will be made available to the open public at the Project Website (www.cebama.eu) and KIT Scientific Publishing, as a deliverable and as a printed KIT scientific report, respectively.

Minutes of the 4th Annual (Final) Workshop of Cebama

Event: 4th Annual (Final) Workshop

Date and place: March 28th - 29th, 2019, ACHAT Plaza Hotel, Karlsruhe (Germany)

Participants: 66, representing Beneficiaries, EUG, AG and other external experts.

The 4th Annual Workshop of Cebama, which is the Final Workshop of the project, was a cluster of the following meetings and sessions:

- ExCom meeting,
- EUG meeting,
- PhD session,
- Plenary sessions (presentation of workpackage outcomes),
- Topical session,
- General Assembly.

The general Workshop agenda is presented in Figure 1. The detailed agenda is included in **Appendix 1**, where the presentations included in each session are listed.

Thursday 28 th March 2019		Friday 29 th March 2019	
8:00-9:30	1 st ExCom meeting (restricted to ExCom members)	8:00-8:45	ExCom & EUG meeting (in parallel) (restricted to ExCom/EUG members)
9:00-9:30	Coffee break	8:45-9:30	ExCom & EUG meeting (join meeting) (restricted to ExCom/EUG members)
9:30-9:40	Welcome + Presentation by the Coordination Team	9:00-9:30	Coffee break
9:40-14:45	PhD Session (PhD presentations, 10 min each)	9:30-11:00	Topical Session + Stakeholder Panel (Topic: Future EU Projects)
11:45-13:00	LUNCH	11:00-12:00	EUG feedback + General Assembly
13:00-14:00	WP1 Summary Session		
14:00-14:45	WP2 Summary Session		
14:45-15:15	Coffee break		
15:15-16:15	WP3 Summary Session		
16:15-17:15	Reporting & Project closure		
19:15	-- Workshop DINNER --		

Figure 1: Agenda of the Final Workshop of Cebama.

Specific minutes for the ExCom meeting, the EUG meeting and the General Assembly are prepared separately to the Workshop minutes (*this document*). The minutes are available at the intranet of the project (www.cebama.eu). Their intranet location is justified by the different access rights (see Table 1).

Table 1: Minutes prepared additionally to this Workshop minutes.

Meeting	Addressee*	Intranet location
ExCom	Restricted to members of the ExCom (Coordination Team and WP leaders)	<i>Files/ExCom/Minutes</i>
EUG	Restricted to members of the EUG and the ExCom	<i>Files/End Users Group/Meetings</i>
General Assembly	Restricted to beneficiaries	<i>Files/General Assembly/Meetings</i>

**all the minutes are available for the Project officer*

The following lines provide an overview of the sessions held during the Final Workshop of the Cebama project.

Welcome (28.03.2019)

Marcus Altmaier, the project coordinator and representative of the host organization (KIT-INE), welcomed the participants.

Following, M. Altmaier proceeded with a brief introduction of the workshop and practicalities.

PhD session (28.03.2019)

After the welcome, 5 out of the 13 PhD students gave a talk presenting the results obtained in their PhD thesis developed in the frame of Cebama.

- *Jana Kittnerová* (CTU) Comparative study of radium and strontium behaviour in contact with cementitious materials.
- *Emily Rastrick* (SURREY) Alteration of groundwater composition following cement interaction.
- *Daniel González-Santamaría* (UAM) Surface Reactivity Interface Experiments studying cement mortars-bentonite interaction in a short spatial-time scale.
- *Naila Ait Mouheb* (KIT-INE) Experimental and modelling studies of low pH cement / clay interface processes: Effects on radionuclide migration.
- *Tapio Vehmas* (VTT) Composition and evolution of cementitious leachates in deep underground repository.

The slides presented by each student are available for project beneficiaries at the intranet of the project. The location is *Files/WP4/4th AWS/Presentations*.

Plenary sessions (28.03.2019)

Three plenary sessions, one session per each technical WP (WP1, WP2 and WP3) took place Thursday afternoon. Each plenary session consists on a presentation given by the corresponding WP leaders.

The three presentations gave an insight on the topics listed below with the aim of providing a complete and integrated view of the work developed during the 4-years of the project.

- Objectives of the workpackage and the partners involved in the investigation studies,
- Summary of the obtained results in an integrated manner,
- Dissemination of the obtained results (mainly conferences and publications),
- Integration between technical workpackages,
- Future needs and impact on the Safety Assessment.

The slides presented in WP1-3 plenary sessions are available at the project intranet (location: *Files/WP4/4th AWS/Presentations*).

Reporting & Project Closure (28.03.2019)

Marcus Altmaier, project coordinator, gave a presentation on behalf of the Coordination Team on managing and coordinating aspects of the project. It was mainly focused on the project closure and the last steps partners, WP leaders and the Coordination Team need to take in order to finalize the project.

Then Alba Valls presented the actions done during the project in view of the Knowledge Management and Dissemination of the project results.

The slides of both presentations are included in **Appendix 2**. They are also available at the project intranet (location: *Files/WP4/4th AWS/Presentations*).

Topical Session and Stakeholder Panel (29.03.2019)

The 3rd Stakeholder Panel was organized as a Topical Session during the Final Workshop of the project. The topical session provides an overview on future EU projects. The following presentations were given:

- *Bernd Grambow* (Subatech/Armines) General overview on EURAD project and the EURADScience network
- *Francis Claret* (BRGM) DONUT, Development and improvement Of NUmerical methods and Tools for modelling coupled processes
- *Marcus Altmaier* (KIT-INE) CORI, Cement Organic Radionuclide Interaction
- *Guido Deissman* (JUELICH) on behalf of Dirk Bosbach, FUTURE, Fundamental understanding of radionuclide retention

The presented slides are available at the project intranet (location: *Files/WP4/4th AWS/Presentations*).

EUG statements (29.03.2019)

Seif Ben Hadj Hassine (EUG chairman), on behalf of the EUG, gave feedback to the Consortium about the project. Their statement is included in **Appendix 3**. The transparencies provided by the EUG are also available at the project intranet (*Files/WP4/4th AWS/Presentations*).

Three main conclusions can be drawn from their presentation:

- The structure of the workshop and its organization in conjunction with the Mechanisms & modelling of waste/cement interactions” workshops was highly appreciated.
- The CEBAMA project was a meaningful opportunity for all of the involved students (Bachelors, Masters and PhD).
- Presentations shown the significant work that was accomplished during the CEBAMA project.

General Assembly (18.05.2017)

The General Assembly, chaired by Norbert Maes (SCK·CEN), closed the Final Workshop of Cebama. Specific minutes of this session, detailing the decisions taken by GA at this meeting, are available at the project intranet and only available for project partners (*Files/General Assembly/Meetings*).

APPENDICES:

Appendix 1: Meeting agenda

Appendix 2: Presentation by the Coordination Team & Dissemination activities

Appendix 3: End-Users Group Feedback on the Final CEBAMA Workshop

Appendix 1: Meeting agenda

Thursday, March 28th, 2019

Place : **ACHAT Plaza Hotel**

Mendelssohnplatz, 76131 Karlsruhe (Germany)

8:00-9:30 1st **ExCom** meeting
(Restricted to ExCom members)

9:00-9:30 Get together – Coffee break

9:30-9:40 **Welcome + Presentation by the Coordination Team** (Marcus Altmaier – KIT-INE)

9:40-11:45 **PhD session** (*20' presentation + 5' questions each PhD*)

- Jana Kittnerová (CTU). Comparative study of radium and strontium behaviour in contact with cementitious materials.
- Emily Rastrick (SURREY). Alteration of groundwater composition following cement interaction.
- Daniel González Santamaría (UAM). Surface reactivity interface experiments.
- Naila Ait Mouheb (KIT-INE). Experimental and modelling studies of low pH cement / clay interface processes: Effects on radionuclides migration.
- Tapio Vehmas (VTT). Composition and evolution of cementitious leachates in deep underground repository environment.

11:45-13:00 LUNCH

13:00-14:00 **WP1 Summary Session** (Erika Holt – VTT, Francis Claret – BRGM and Urs Mäder – UNIBERN)

14:00-14:45 **WP2 Summary Session** (Bernd Grambow – Subatech/Armines)

14:45-15:15 Coffee break

15:15-16:15 **WP3 Summary Session** (Andrés Idiart – Amphos 21)

16:15-17:15 **Reporting & Project Closure** (Coordination Team – KIT-INE and Amphos 21)

19:15 Workshop dinner (*ACHAT Plaza Hotel*)

Friday, March 29th, 2019

Place : **ACHAT Plaza Hotel**

Mendelssohnplatz, 76131 Karlsruhe (Germany)

8:00-8:45 2nd **ExCom** meeting and **EUG** meeting (*in parallel*)
(*Restricted to ExCom and EUG members*)

8:45-9:30 **ExCom + EUG** meeting (*join meeting*)
(*Restricted to ExCom and EUG members*)

9:00-9:30 *Get together – Coffee break*

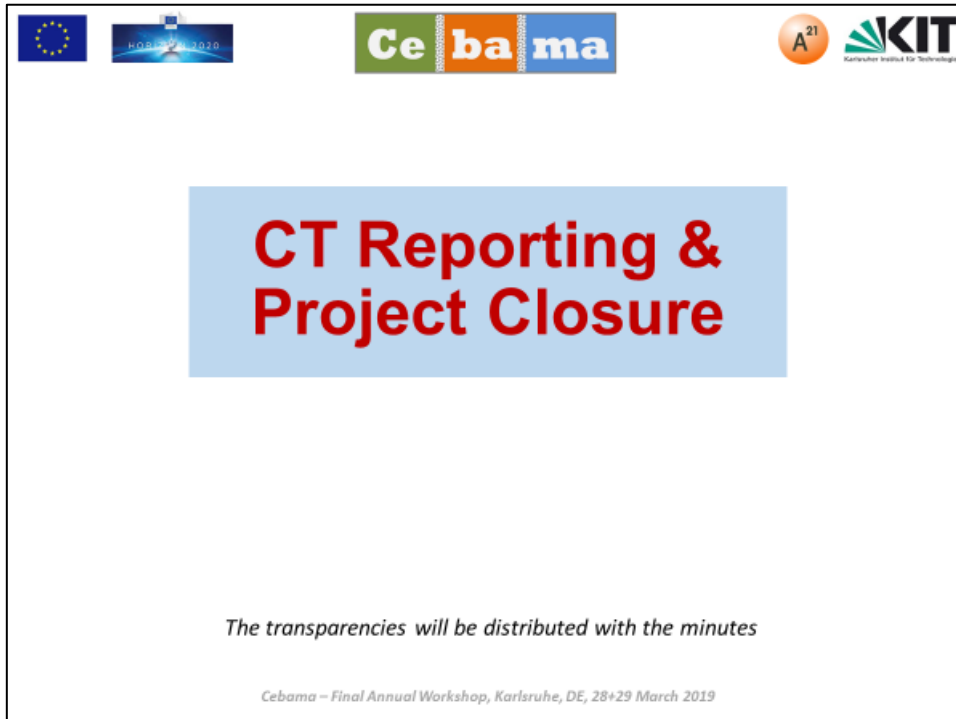
9:30-11:00 **Topical Session + Stakeholder Pannel** (15' presentation + 5' questions)
 Future EU projects

- General overview on EURAD project and the EURADScience network – Bernd Grambow, Subatech/Armines
- DONUT – Francis Claret, BRGM
- CORI – Marcus Altmaier, KIT-INE
- FUTURE – Dirk Bosbach, JUELICH

11:00-12:00 **EUG feedback + General Assembly**

12:00-13:00 LUNCH (snack)

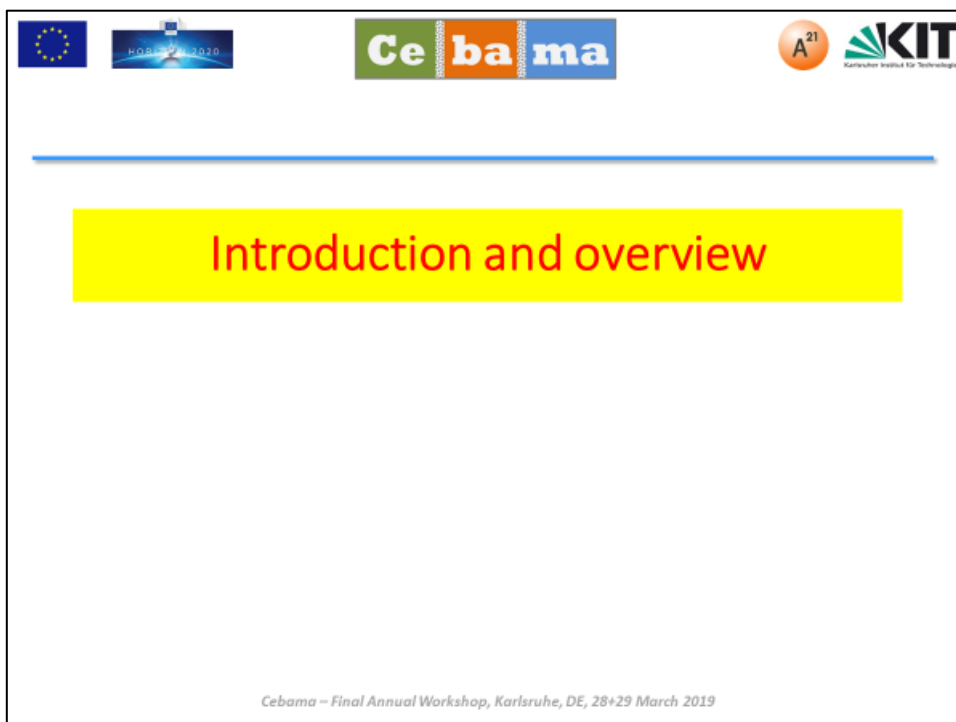
Appendix 2: Presentation by the Coordination Team & Dissemination activities (M. Altmaier – KIT & A. Valls – Amphos 21)



CT Reporting & Project Closure



The transparencies will be distributed with the minutes


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Introduction and overview

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Cebama - key data

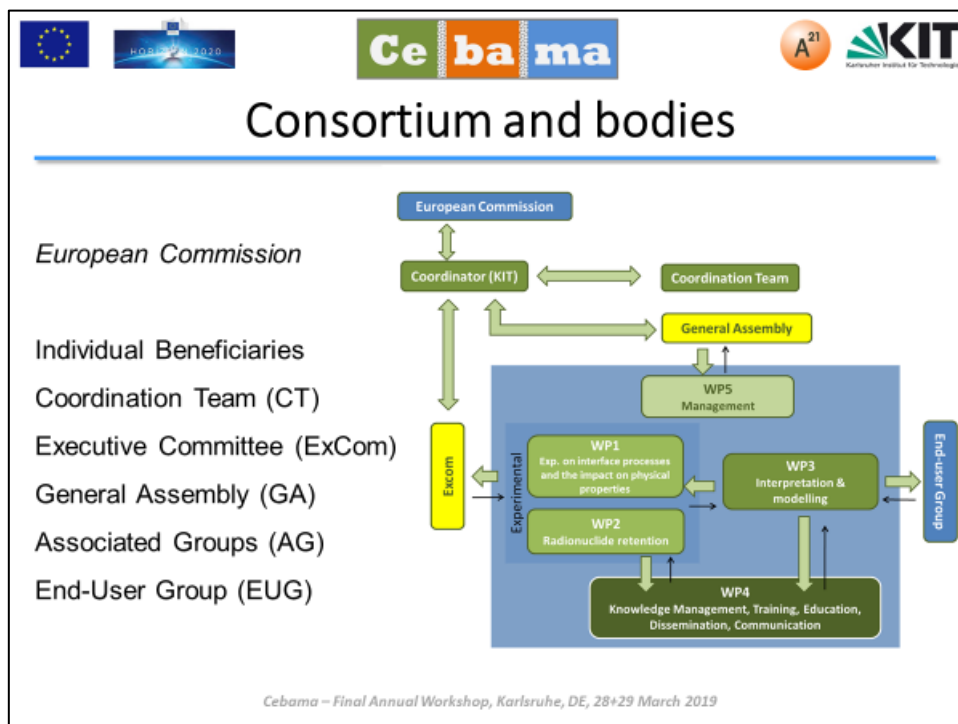
- **Grant agreement No:** 662147 => **basis for the Cebama project!**
- **Action full title:** Cement-based materials, properties, evolution, barrier functions
- **Estimated eligible costs:** 5,952,944.50 EUR
- **Maximum grant amount:** 3,868,607.25 EUR
- **PF Amount:** 1,676,397.00 EUR
- **GF Amount:** 193,430.36 EUR
- **Reporting periods:**
















We are at PM 46 !


No	Month From	Month To	
1	1	18	DONE
2	19	36	DONE
3	37	48	June 2019















from Grant Agreement Data Sheet

Cebama – Final Annual Workshop, Karlsruhe, DE, 28+29 March 2019








				
<h2>Individual Beneficiaries</h2>				
1	KIT	KARLSRUHE INSTITUTE OF TECHNOLOGY		DE
2	AMPHOS 21	AMPHOS 21 CONSULTING SL		ES
3	BRGM	BUREAU DE RECHERCHES GEOLOGIQUES ET MINIERES		FR
4	NERC-BGS	NATURAL ENVIRONMENT RESEARCH COUNCIL		UK
5	CIEMAT	CENTRO DE INVESTIGACIONES ENERGETICAS, MEDIOAMBIENTALES Y TECNOLOGICAS		ES
6	TU Delft	TECHNISCHE UNIVERSITEIT DELFT		NL
7	JUELICH	FORSCHUNGSZENTRUM JUELICH		DE
8	RATEN ICN	REGIA AUTONOMA TEHNOLOGII PENTRU ENERGIA NUCLEARA		RO
9	NRG	NUCLEAR RESEARCH AND CONSULTANCY GROUP		NL
10	RWMC	RADIOACTIVE WASTE MANAGEMENT FUNDING AND RESEARCH CENTER		JP
<i>Cebama – Final Annual Workshop, Karlsruhe, DE, 28+29 March 2019</i>				

				
<h2>Individual Beneficiaries</h2>				
11	SCK CEN	STUDIECENTRUM VOOR KERNENERGIE- CENTRE D'ETUDE DE L'ENERGIE		BE
12	ARMINES	ASSOCIATION POUR LA RECHERCHE ET LE DEVELOPMENT DES METHODES ET PROCESSUS INDUSTRIELS		FR
13	UJV	UJV REZ A.S.		CZ
14	UDC	UNIVERSIDAD DE LA CORUNA		ES
15	ULOUGH	UNIVERSITY OF Loughborough		UK
16	CTU	CESKE VYSOKE UCENI TECHNICKE V PRAZE		CZ
17	USFD	THE UNIVERSITY OF SHEFFIELD		UK
18	VTT	TEKNOLOGIAN TUTKIMUSKESKUS		FI
19	HZDR	HELMHOLTZ-ZENTRUM DRESDEN-ROSSENDORF EV		DE
<i>Cebama – Final Annual Workshop, Karlsruhe, DE, 28+29 March 2019</i>				

				
Individual Beneficiaries				
20	LML	UNIVERSITE DES SCIENCES ET TECHNOLOGIES DE LILLE – LILLE 1		FR
21	UAM	UNIVERSIDAD AUTONOMA DE MADRID		ES
22	CSIC	AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS		ES
23	ANDRA	AGENCE NATIONALE POUR LA GESTION DES DECHETS RADIOACTIFS		FR
24	PSI	PAUL SCHERRER INSTITUT		CH
25	UNIBERN	UNIVERSITAET BERN		CH
26	IRSN	INSTITUT DE RADIOPROTECTION ET DE SÛRETÉ NUCLÉAIRE		FR
27	EMPA	SWISS FEDERAL LABORATORIES FOR MATERIALS TESTING AND RESEARCH		CH
28	SURREY	UNIVERSITY OF SURREY		UK
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Project Coordination Team (CT)				
<ul style="list-style-type: none"> ➤ The coordinator is KIT. ➤ The coordination team is shared by two organizations, the Coordinator (KIT), and the Coordination Secretariat (AMPHOS21): 				
<p>Project Coordinator – Marcus Altmaier (KIT)</p> <p>Scientific-Technical Coordination Support – Lara Duro (AMPHOS21)</p> <p>Knowledge Management and Dissemination Officer – Alba Valls (AMPHOS21)</p> <p>Administrative Officer – Vanessa Montoya (KIT)</p> <p>Financial Officer – Bernhard Dasselaar (KIT)</p> <p>Legal Officer – Julia-Aline Groh (KIT)</p>				
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Executive Committee (ExCom)

The project ExCom consists of the WP leaders and the Coordination Team:

WP 1 Experiments on interface processes and the impact on physical properties
Erika Holt (VTT) “spokeswoman”, **Francis Claret** (BRGM), **Urs Mäder** (UNIBERN)






WP 2 Radionuclide retention
Bernd Grambow (ARMINES)

WP 3 Interpretation & Modelling
Andrés Idiart (AMPHOS21)

WP 4 Documentation, Knowledge Management, Dissemination and Training
Alba Valls (AMPHOS21)

WP 5 Management
Marcus Altmaier (KIT), **Vanessa Montoya** (KIT)

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General Assembly (GA)

The General Assembly consists of one member from each partner organization to the project, including also the Non-EU organizations.
Norbert Maes (SCK-CEN) is Chairperson of the General Assembly.

- GA meetings are organized annually in conjunction with the annual workshops.
- Attendance in the GA meetings is restricted to the project beneficiaries (but open to extend to EUG who sit in and listen without having a vote).
- It has the ultimate responsibility regarding approval of management structure, project direction and Consortium Agreement.
- The role of the GA is to ensure that interests of the Beneficiaries are reflected, to guide project implementation and to formally accept decisions of significant importance for the project as a whole. Project management issues are discussed and adopted in GA meetings.

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Associated Group

- **Approach to AGs joining Cebama is defined in the Consortium Agreement Attachment, (=> Agreement on AG Participation).**

- AGs are participating in Cebama at their own costs with specific contributions.
- AGs are contributing to Cebama, within a structured dialogue to define areas and subjects of mutual interest.
- AGs are invited to the Annual Project Workshops.
- AGs will receive access to the public deliverables and scientific technical information obtained in the project.

- **AGs to Cebama are:**
 - **Moscow State University (MSU), Russia,**
 - **Los Alamos NL Carlsbad Office (LANL-CO), USA,**
 - **Swiss Federal Nuclear Safety Inspectorate (ENSI), Switzerland.**

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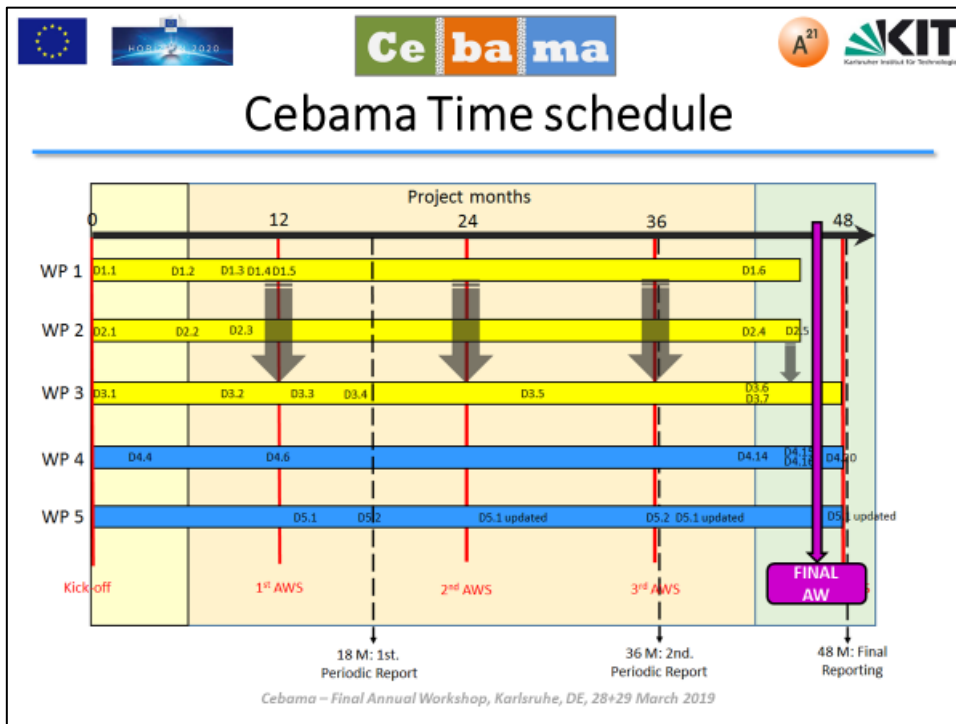






End-User Group (EUG)

The EUG is composed of nine persons representing Nuclear Waste Management organizations interests/expertise:






- ANDRA**, represented by Pierre Henocq
- COVRA**, represented by Erika Neeft
- ENRESA**, represented by Miguel Angel Cuñado
- NAGRA**, represented by Nikitas Diomidis
- ONDRAF/NIRAS**, represented by Seif Ben Hadj Hassine (EUG chairperson)
- POSIVA**, represented by Marja Vuorio
- RWM**, represented by Amy Shelton
- SKB**, represented by Per Martensson
- SURAO**, represented by Lucie Hausmannova (and Antonin Vokal)

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Publications, Acknowledgments, Ethics, Risks

Cebama – Final Annual Workshop, Karlsruhe, DE, 28+29 March 2019






Publications...

29.2 Open access to scientific publications

Each beneficiary must ensure open access (free of charge online access for any user) to all peer-reviewed scientific publications relating to its results.

- Cebama CT and all individual beneficiaries have **no specific budget** to support paying publishers to allow free access.
- It can be reported as a Eligible cost without increasing the approved budget
- Cebama will use financial resources which have not been used in the project at the end of the project and distribute this to partners in order to reimburse those who have spent money to provide open access.

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Publications...

8.3.1 Dissemination of own Results

8.3.1.1 During the Project and for a period of 1 year after the end of the Project, the dissemination of own Results by one or several Parties including but not restricted to publications and presentations, shall be governed by the procedure of Article 29.1 of the Grant Agreement subject to the following provisions:

Prior notice of any planned publication shall be given to the other Parties at least 45 calendar days before the publication. Any objection to the planned publication shall be made in accordance with the Grant Agreement in writing to the Coordinator and to the Party or Parties proposing the dissemination within 30 calendar days after receipt of the notice. If no objection is made within the time limit stated above, the publication is permitted.

Cebama CA

- **Manuscripts for publication are sent to CT who distribute them to ExCom.**
- **CT and ExCom assess if manuscript is prepared according to the principles set out in GA and CA.**
- **Please continue communicating publications to ExCom/CT after PM 48.**

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Acknowledge Cebama

Acknowledge the EC in your presentations/publications:

"The research leading to these results has received funding from the European Union's European Atomic Energy Community's (Euratom) Horizon 2020 Programme (NFRP-2014/2015) under grant agreement, 662147 - Cebama"

29.5 Disclaimer excluding *Commission* responsibility

Any dissemination of results must indicate that it reflects only the author's view and that the *Commission* is not responsible for any use that may be made of the information it contains.

➤ Point of reference is Cebama GA

Cebama – Final Annual Workshop, Karlsruhe, DE, 28+29 March 2019



Ethics

EC has defined two deliverables on Ethics (two ethics-deliverables defined as WP6).

WP6	D6.1	D45	NEC - Requirement No. 1
WP6	D6.2	D46	EPQ - Requirement No. 2

Non-European Countries
Environmental Protection Questions

Copied from Grant Agreement, (pdf page 244)

Ethics Issue Category: NON-EU COUNTRIES - *There is a requirement to confirm that the Japanese partner will apply rigorously the ethical standards and guidelines of Horizon2020.*

=> The Japanese partner (Beneficiary No. 10, RWMC) will be reminded to rigorously apply the ethical standards and guidelines of Horizon 2020. Note that Cebama does not include any work on animal and/or human tissue samples, genetic material, live animals, human remains, materials of historical value, endangered fauna or flora samples, etc..

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Ethics

Copied from Grant Agreement, (pdf page 244)

Ethics Issue Category: ENVIRONMENT PROTECTION QUESTION - *The coordinator is required to confirm the environmental protection and safety aspects related to WP2 (experiments with radioactive species) before experiments are performed in any facility for this project. It is also advised that a member of the Coordinator is identified with responsibility for health and safety documentation and that overview is provided by the General Assembly.*

=> The Coordinator confirms that all laboratories contributing in WP2 on work with radionuclides must strictly adhere to the respective legal, environmental protection and safety regulations valid for the respective labs. The licenses of the laboratories for working with radioactive substances are subject to the individual national legislations and rules. The same applies for the responsibility regarding health and safety documentation when working in these labs. At the kick-off meeting, a member of the Coordinator will be identified to monitor health and safety aspects in Cebama related to WP2 activities. In addition, an overview will be provided at the General Assembly.

M. Altmaier (KIT) monitors health and safety aspects in Cebama.

=> Positive confirmation that Ethics requirements were followed. (GA)

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Risk Assessment

Copied from Grant agreement (pdf page 159):

The General Assembly will conduct a risk assessment at the kick-off meeting and the Annual Workshops, to identify critical risks, as well as their avoidance and mitigation plans on the basis of the information provided in the Description of Action. The risks will be judged to evaluate severity and impacts to the project's objectives and implementation. The risk assessment will include both technical challenges as well as concerns for the project operation. The risk assessments will be included in the periodic reporting to the EC.

- **No risks identified at PM 46.**
- **Decision will be done at General Assembly.**

Cebama – Final Annual Workshop, Karlsruhe, DE, 28+29 March 2019



Deliverables and Milestones

Deliverables and Milestones must be completed before finalizing CEBAMA.

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Project Deliverables

WP1: Experiments on interface processes and the impact on phys. properties

No	Deliverable name	Lead Part	Type	DL	DD
D1.1	Detailed WP1 description of scientific work: compilation of partner descriptions with update of Appendix_B	BRGM/VTT/ UNIBERN	R	PU	01
D1.2	Agreement and documentation of systems to be studied	BRGM/VTT/ UNIBERN	R	PU	06
D1.3	State-of-art report related to WP1 topics (initial)	BRGM/VTT/ UNIBERN	R	PU	09
D1.4	Report on WP1 established experimental boundary conditions, experimental methods	BRGM/VTT/ UNIBERN	R	PU	10
D1.5	Report on WP1 selected experimental materials to be used, including both new laboratory and aged in-situ samples	BRGM/VTT/ UNIBERN	R	PU	12
D1.6	State-of-art report related to WP1 topics (updated)	BRGM/VTT/ UNIBERN	R	PU	42
D1.7	Manuscript for peer-reviewed publication on results generated in WP1	BRGM/VTT/ UNIBERN	R	PU	48

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Project Deliverables

WP2: Radionuclide retention in high pH concrete

No	Deliverable name	Lead Part	Type	DL	DD
D2.1	Detailed WP2 description of scientific work: compilation of partner descriptions with update of Appendix_B	ARMINES	R	PU	01
D2.2	Agreement and documentation of systems to be studied	ARMINES	R	PU	06
D2.3	State-of-art report related to WP2 topics (initial)	ARMINES	R	PU	09
D2.4	State-of-art report related to WP2 topics (updated)	ARMINES	R	PU	42
D2.5	Report on new data (sorption, speciation, solubility) for radionuclide retention generated in WP2 (with updating)	ARMINES	R	PU	45
D2.6	Manuscript for peer-reviewed publication on results generated within WP2	ARMINES	R	PU	48

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Project Deliverables

WP3: Interpretation and modelling

No	Deliverable name	Lead Part	Type	DL	DD
D3.1	Detailed WP3 description of scientific work: compilation of partner descriptions with update of Appendix_B	AMPHOS21	R	PU	01
D3.2	Review and definition of modelling approach to be followed in the project: scale of analysis, physico-chemical processes, software, HPC resources.	AMPHOS21	R	PU	09
D3.3	Consolidated plan for Upscaling Modelling Task	AMPHOS21	R	PU	14
D3.4	Description of and results from the modelling of external lab and/or field experiments and industrial analogues	AMPHOS21	R	PU	18
D3.5	Preliminary results and interpretation of the modelling by incorporating results from WP1&WP2 experiments.	AMPHOS21	R	PU	30
D3.6	Final results and interpretation of the modelling by incorporating results from WP1&WP2 experiments	AMPHOS21	R	PU	45

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Project Deliverables

WP3 (continued)

No	Deliverable name	Lead Part	Type	DL	DD
D3.7	Report on the Upscaling Modelling Task	AMPHOS21	R	PU	45
D3.8	Manuscript for peer-reviewed publication on results generated within WP3	AMPHOS21	R	48	48

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Project Deliverables

WP4: Knowledge management, training and dissemination

No	Deliverable name	Lead Part	Type	DL	DD
D4.1	Preparation of a generic poster presenting the project	AMPHOS21	R	PU	0
D4.2	Set up project webpage and blog	AMPHOS21	R	PU	0
D4.3	Minutes from kick-of meeting	AMPHOS21	R	CO	02
D4.4	Planning on interaction with socio-political stakeholders	AMPHOS21	R	PU	03
D4.5	Communication Action Plan	AMPHOS21	R	PU	03
D4.6	Planned dissemination of final results	AMPHOS21	R	PU	12
D4.7 D4.10 D4.12 D4.18	Minutes of 1 st , 2 nd , 3 rd and 4 th annual workshop, respectively	AMPHOS21	R	CO	13 25 37 48

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Project Deliverables

WP4 (continued)

No	Deliverable name	Lead Part	Type	DL	DD
D4.8 D4.11 D4.13 D4.19	Draft of the 1 st , 2 nd , 3 rd , 4 th Annual Annual project Workshop Proceedings, respectively	AMPHOS21	R	PU	15 27 39 48
D4.14	Report on interaction with non-scientific stakeholder	AMPHOS21	R	PU	42
D4.15	Final project reporting, dissemination, communication, training & education, ethical/socio-political/broader stakeholder involvement	AMPHOS21	R	PU	45
D4.16	Press release	AMPHOS21	R	PU	45
D4.17	List of mobility measures and summary of the works undertaken	AMPHOS21	R	PU	45
D4.9 D4.20	Report on the relevance of the outcome of Cebama for the Safety Case (Manuscript for peer-reviewed publication)	AMPHOS21	R	PU	18 48

Cebama – Final Annual Workshop, Karlsruhe, DE, 28+29 March 2019

Project Deliverables

WP5: Project management

No	Deliverable name	Lead Part	Type	DL	DD
D5.1.x	Report/Documentation of exchange of data between experimental and modeling WPs (with updating)	KIT/ AMPHOS21	R	PU	14,26, 38,48
D5.2.x	Periodic management and activity reports	KIT/ AMPHOS21	R	PU	18,36, 48
D5.3	Final report (EUR)	KIT/ AMPHOS21	R	PU	48

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Project Milestones

WP1

No	Milestone name	Estimates date	Means of verification
M1.1	Establish test methods, boundary conditions, materials	6	D1.3 and D1.4
M1.2	Distribution of first concrete and bentonite samples from existing in-situ (field) sites	12	MIN
M1.3	Distribution of first laboratory prepared samples	12	MIN
M1.4.x	Contributing to Kick-off meeting, Annual Project Workshops and Final Workshop	1,12,24,36, 48	WS Proc.
M1.5	1st WP1 data freeze of experimental data (input to WP3)	24	MAR
M1.6	2nd WP1 data freeze of experimental data (input to WP3)	36	MAR

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Project Milestones

WP2

No	Milestone name	Estimates date	Means of verification
M2.1.x	Contributing to Kick-off meeting, Annual Project Workshops and Final Workshop	1,12,24,36, 48	WS Proc.
M2.2	1st WP2 data freeze of experimental data (input to WP3)	24	MAR
M2.3	2nd WP2 data freeze of experimental data (input to WP3)	36	MAR

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Project Milestones

WP3

No	Milestone name	Estimates date	Means of verification
M3.1.x	Contributing to Kick-off meeting, Annual Project Workshops and Final Workshop	12,24,36, 48	WS Proc.
M3.2	Input received from 1st data freeze of experimental data (from WP1 and WP2)	24	MAR
M3.3	Input received from 2nd data freeze of experimental data (from WP1 and WP2)	36	MAR

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Project Milestones

WP4

No	Milestone name	Estimates date	Means of verification
M4.1	Organizing the kick-off meeting	1	MIN
M4.2 M4.4 M4.6 M4.8	Organizing 1 st , 2 nd , 3 rd and 4 th Annual Project Workshops, including training course, flyer etc, respectively.	10 22 34 45	WS Proc.
M4.3 M4.5 M4.7 M4.9	Exchange with EUG on project, ensuring that work is properly implemented and fits to End User requirements	10 22 34 45	MAR

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Project Milestones

WP5

No	Milestone name	Estimates date	Means of verification
M5.1.x	Printing of Annual Project Workshop Proceedings	16,28, 40 ,48	MAR

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Final Workshop, Dissemination, Proceedings

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Project Workshops

Calendar of project meetings

2015: Kick-off meeting, Brussels, Belgium (2 July 2015)

2016: 1st AWS organized by Amphos21, Barcelona, Spain (11-13 May 2016)

2017: 2nd AWS organized by VTT, Finland (16-18 May 2017)




2018: 3rd AWS organized by Subatech, Nantes, France (17-18 April)



2019: 4th and Final AWS organized by KIT-INE, Karlsruhe, GER, 28+29 March
 (Organized in connection to Workshop "Mechanisms and Modelling of Waste/Cement Interactions").

Mo, 25.3., - We 27.3. : International Workshop

Tu 28.3. + Fri 29.3.: Cebama Final Meeting

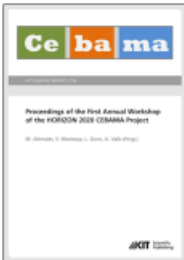
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Annual Project Workshops, Proceedings

- The workshop proceedings are published at KIT-Scientific publishing will be openly accessible and can be downloaded free of charge at the project WEB page <http://www.ksp.kit.edu>.
- Review by EUG on S&T contributions.
- Proceedings for 1AWS and 2AWS printed (considerably delayed)
- **3 AWS proceedings ready. Proposal to combine printing with input from Final Workshop. (=> GA)**



Proceedings of the Annual Workshops of CEBAMA

Cebama – Final Annual Workshop, Karlsruhe, DE, 28+29 March 2019



Annual Project Workshops, Proceedings

➤ Process for Dissemination - Final CEBAMA Workshop

- **Special Issue in Applied Geochemistry** arranged for both contribution from the International Workshop and CEBAMA Final AS. (M. Altmaier acts as guest-editor, review process according to AG guidelines. Reviewer for Special Issues from Intl. WS steering group and CEBAMA ExCom and EUG)
- CEBAMA partners encouraged to submit R&D paper to the Special Issue.
- Journal will open submission portal from April/May to July 2019.
- **CEBAMA Final Workshop Proceedings** will not include S&T contributions as before.
- Each partner prepared summary on work performed over entire CEBAMA project (based on "surveys", review within ExCom, no EUG review required).
- WP leader contribute „integrated“ summaries on main results and impact. (=> share with EUG for comments).

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CEBAMA presentations at EURADWASTE

Cebama – Final Annual Workshop, Karlsruhe, DE, 28+29 March 2019







CEBAMA presentation at EURADWASTE






<http://fisa-euradwaste2019.nuclear.ro/>





FISA 2019 • EURADWASTE '19
 9th European Commission Conferences on EURATOM Research and Training in
 Safety of Reactor Systems Radioactive Waste Management

Cebama – Final Annual Workshop, Karlsruhe, DE, 28+29 March 2019

CEBAMA presentation at EURADWASTE

- (1) CEBAMA: Research and innovation action on cement-based materials, properties, evolution and barrier functions (CT, ExCom)
- (2) Benchmark of reactive transport models within CEBAMA: application to a concrete/clay interface (Idiart et al.)
- (3) Chemistry of beryllium in cementitious systems studied within CEBAMA: solubility, hydrolysis, carbonate complexation and sorption (Gaona et al.)
- (4) Studies of Radium and Strontium uptake on Cementitious materials within CEBAMA project (Jana Kittnerova et al.)
- (5) Radionuclide migration in low-pH cement / clay interfaces; derivation of reactive transport parameters within the CEBAMA project. (Naila Ait Mouheb et al.)

CEBAMA will be well represented in EURADWASTE...

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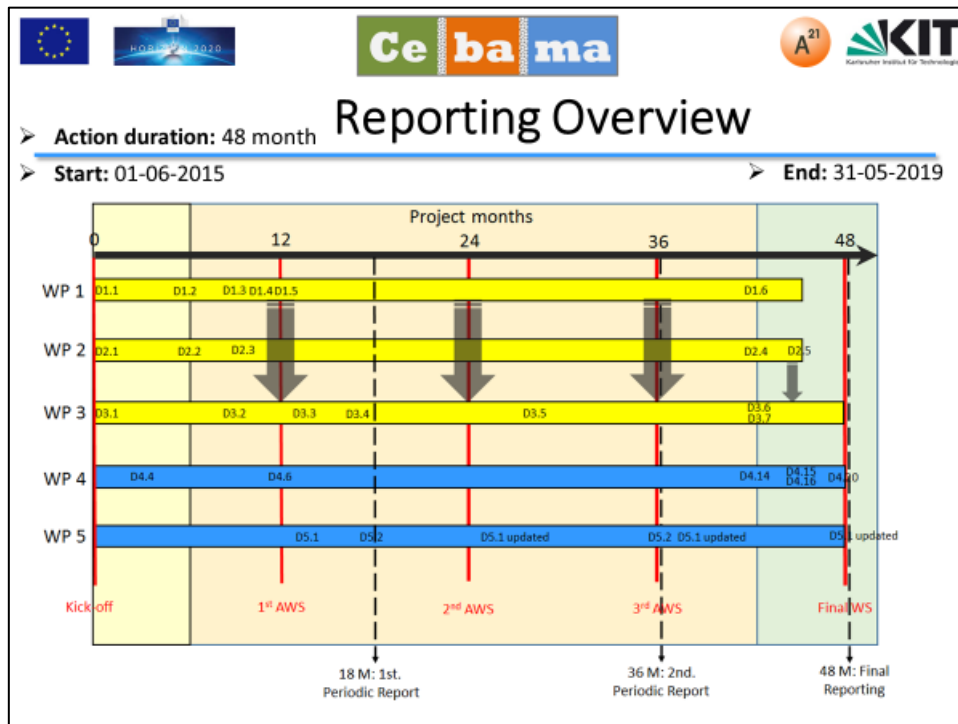
Dissemination, Mobility, Gender
=> Alba Valls, WP4


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CEBAMA reporting => Technical, Financial

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CEBAMA Reporting

- The reporting function is **activated** at the **end of each reporting period** at PP.

Final Reporting:
(expected)
Activation date: 31st May 2019
Reporting deadline: 31st July 2019



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CEBAMA Reporting

Structure of the Report

1. **Technical** Report
 1. Part A (to be done via the participant portal)
 2. Part B (to be submitted as a report)
2. **Financial** Report (Individual financial statements filled in by each beneficiary and validated by the Coordinator)

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Technical Report – Part A

PART A






- **CT adds information** based on your feedback (already received) to PP.



Summary for publication	Deliverables, Ethics, Other Reports	Milestones	Critical Risks	Publications	Dissemination	Patents (IPR)	SME Impact	Gender	ABS Regulation
✓	i	i	✓	✓	✓	✓	⚠	✗	i

- Please fill in info on publications !
- Check info on gender as filled in by CT.
- Please don't change these texts by your own.

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Technical Report – Part B

PART B

- Core part of the report (free text – pdf document)
- **Done by CT** with the input from all beneficiaries

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Financial reporting

FINANCIAL REPORT

- Beneficiaries and linked third parties must fill these in and submit them to the Commission, as part of the report.
- Consists of structured forms from the grant management system, including:
 - individual financial statements for each beneficiary (and third parties)
 - explanation of the use of resources and the information on subcontracting and in-kind contributions provided by third parties, from each beneficiary for the reporting period concerned

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Financial reporting

- „lesson-learned“ from 2nd periodic reporting: EC rejected reporting requesting additional information.

Please provide description of the costs incurred in the other direct costs category.
If any travel was performed, please indicate the date, place, purpose and number or name of travellers and travel costs for each travel.

- Please prepare this kind of information and add to your financial reporting documents. May speed up process...

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Financial reporting

- Requested EC funding for each partner defined according to GA. This funding needs to be justified in financial reporting. If you don't report 100% effort (EURO basis), EC contribution is less!
- “Remaining” funding will be distributed according to
 - reimburse partners who have costs for open access publications,
 - partners who have justified >100% according to accepted financial reporting.

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Financial reporting

- **Estimated eligible costs:** 5,952,944.50 EUR
- **Maximum grant amount:** 3,868,607.25 EUR

- **Guaranty Fund:** 193,430.36 EUR

- **Pre-financing :** 1,482,966.64 EUR distributed (2015)
- **1st reporting period:** 1,527,463.31 EUR distributed (2017)
- **2nd reporting period:** 277,886.22 EUR distributed (2019)






- **Final reporting:** 580,291.08 EUR to distribute (if all is accepted)

Cebama – Final Annual Workshop, Karlsruhe, DE, 28+29 March 2019



Status and Summary






Cebama – Final Annual Workshop, Karlsruhe, DE, 28+29 March 2019

Project Status

- Kick-off meeting of Cebama in Brussels, July 2015.
- Meetings on WP level in London, Nov. 2015, in connection to IGD-TP EF.
- PM 7: start of Experimental Program.
- Consortium Agreement for Cebama completed in February 2016.
- First Annual Workshop, May 2016, Barcelona.
- Reporting to EC at PM18 was submitted in early March 2017.
- Second Annual Workshop, May 2017, Helsinki.
- Third Annual Workshop, April 2018, Nantes.
- Reporting to EC at PM 36 submitted in mid-2018, related funding distributed start 2019.
- PM 42: Closing of Experimental Programm (WP 3 ongoing).
- **Final Annual Workshop, March 2019, Karlsruhe**, connected to Intl. Workshop.
- **CEBAMA closes end of May 2019, FINAL reporting!**
- **CEBAMA presentation at EURADWASTE.**

Cebama – Final Annual Workshop, Karlsruhe, DE, 28+29 March 2019

Targeted dissemination tools

- CEBAMA Newsletter, Website...
- S&T contributions to Annual CEBAMA Workshops and Proceedings.
- **Individual peer-reviewed scientific publications.**
 - Individual publications by beneficiaries in scientific journals.
 - Contributions to Special Issue in Applied Geochemistry.
- **Integrated Reports**
 - Peer-reviewed publications on WP level. ("WP-leader" et al.)
 - Application to the Safety Case. (Duro et al.)
 - Final report – EURADWASTE paper ("CT/Altmaier" et al.)
- CEBAMA potentially available for EURAD knowledge management activities.

Cebama – Final Annual Workshop, Karlsruhe, DE, 28+29 March 2019



Summary






- *At PM 46, March 2016, CEBAMA is working according to planning.*
- *Deliverables have been prepared or will be submitted.*
- *Relevant Milestones have been reached.*
- *No significant problems were reported by partners.*
- *Constructive R&D interactions within CEBAMA and with EUG.*
- *CEBAMA focusses on closing of project an Final Reporting.*
- *Dissemination of R&D results ongoing...*

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Topics for General Assembly

Cebama – Final Annual Workshop, Karlsruhe, DE, 28+29 March 2019








Topics for General Assembly (GA)

Topics for GA at end of Final WS (Friday last session):

- **Acceptance of project progress and achievements.**
- **Risk assessment.**
- **Ethics discussion**
- **3 AWS and Final WS Proceedings, combined printing.**
- **...**

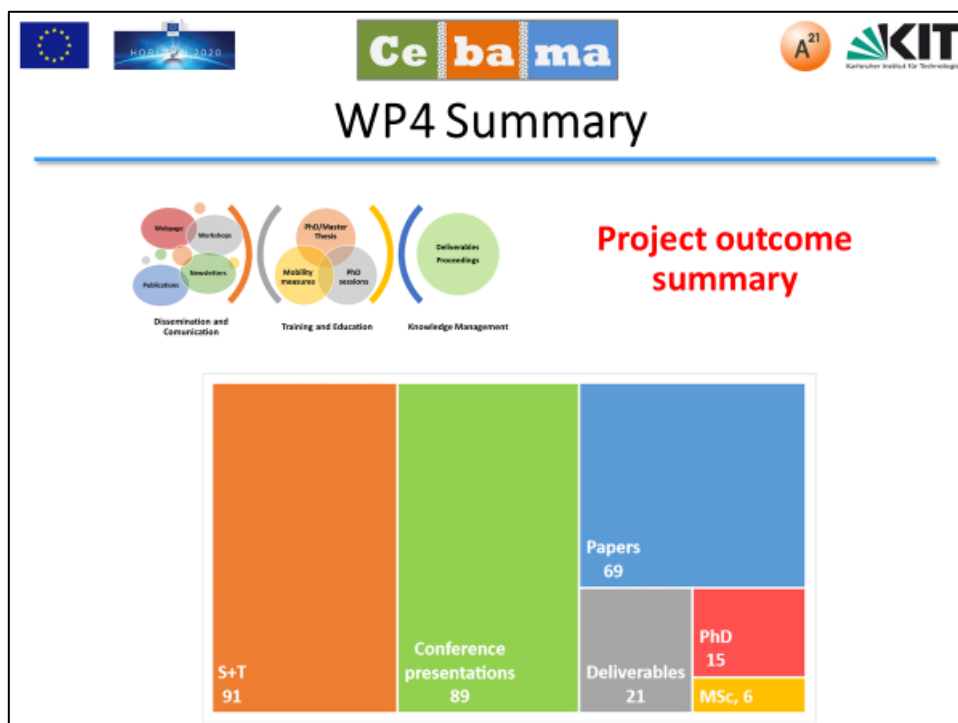
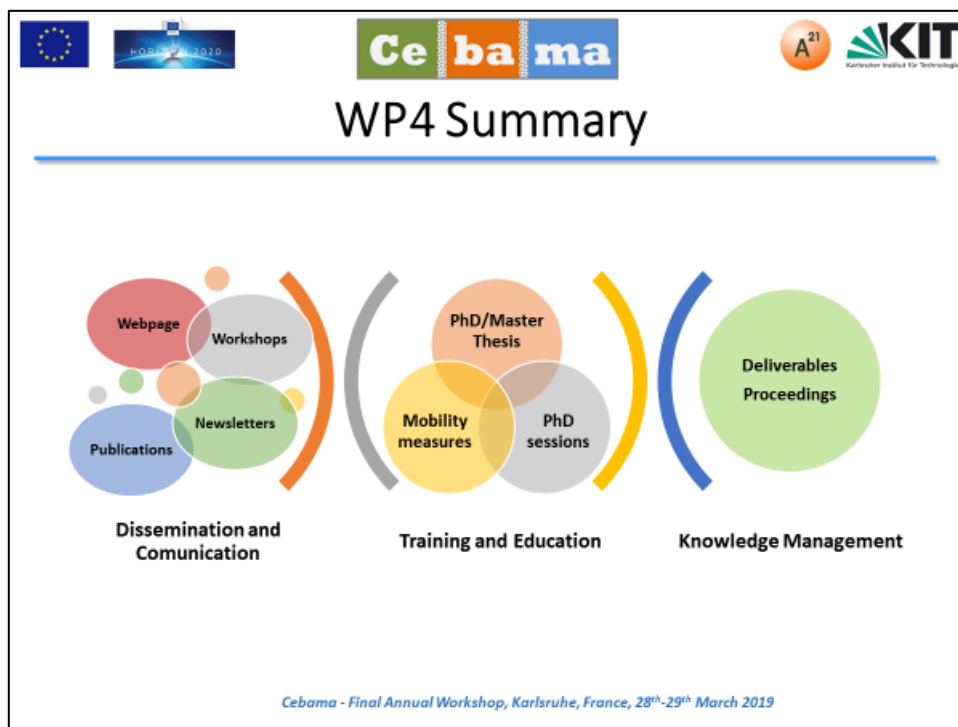
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Presentation by the Coordination Team



The transparencies will be distributed with the minutes

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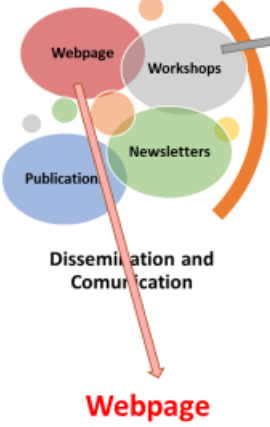




Dissemination & Communication





Dissemination and Communication


Webpage



Workshops

- 2015: Kick-off meeting, Brussels, Belgium (2 July 2015)
- 2016: 1st AWS organized by Amphos21, Barcelona, Spain (11-13 May 2016)
- 2017: 2nd AWS organized by VTT, Finland (16-18 May 2017)
- 2018: 3rd AWS organized by Subatech, Nantes, France (17-18 April 2018)
- **2019: 4th AWS organized by KIT-INE, Karlsruhe, Germany (28-29 March 2018)**


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Dissemination & Communication




Dissemination and Communication

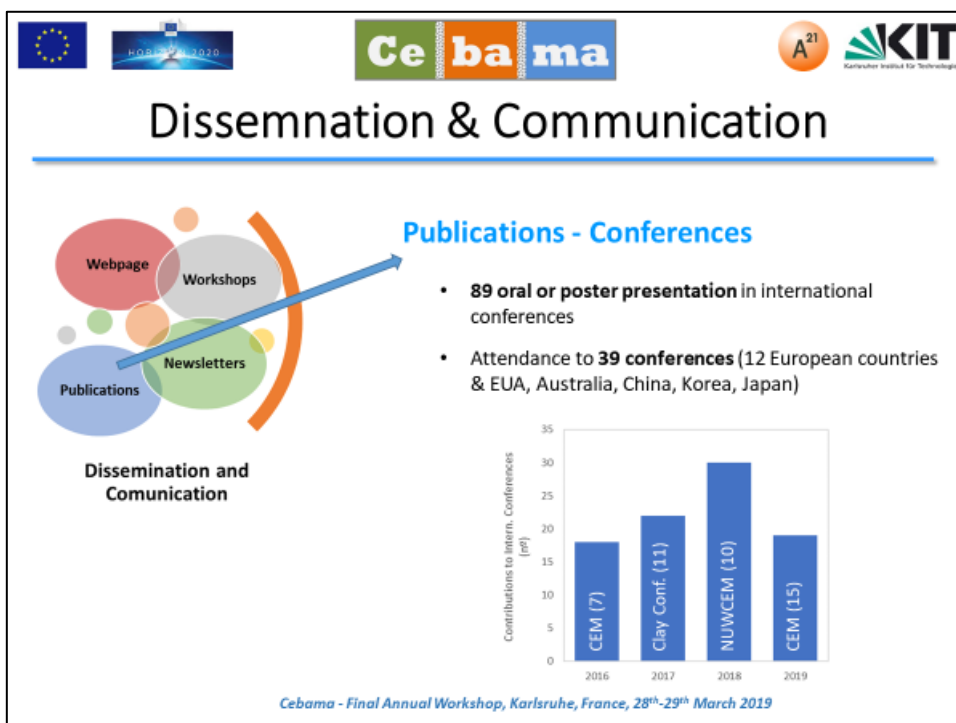
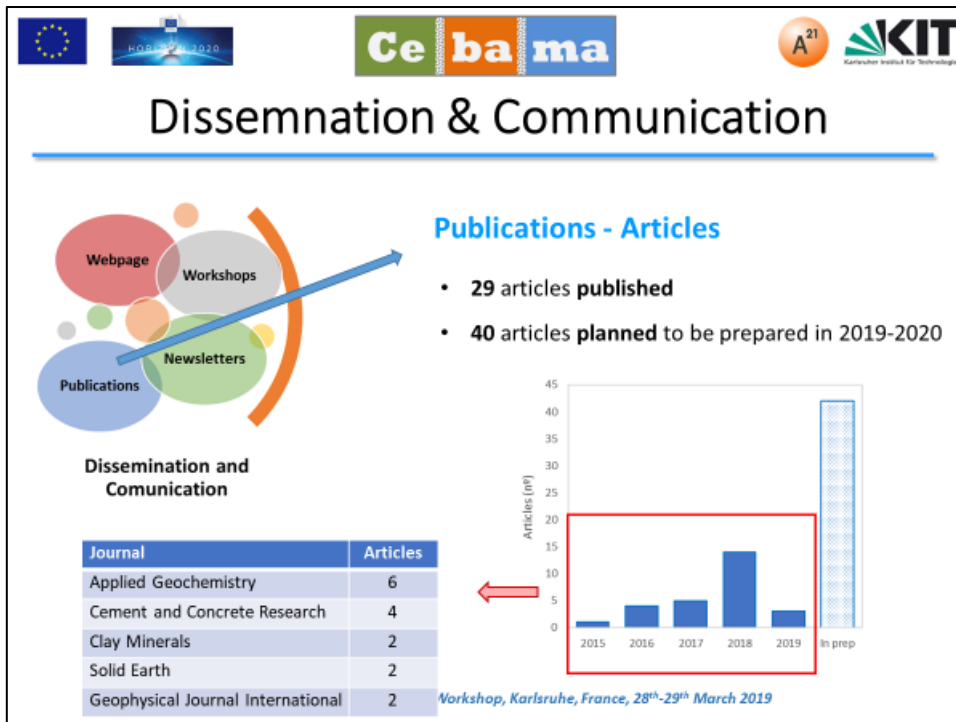
Final Newsletter

April 2019 – Newsletter will be ready

Please **distribute and post** it in social media to reach as much **non scientific public** as possible



Cebama - FI



Training & Education

Training and Education

Master & PhD Thesis

- 6 MSc Thesis
- 15 PhD Thesis

Cebama - Final Annual Workshop, Karlsruhe, France, 28th-29th March 2019

Training & Education

Jana Kittnerová (CVUT / JUELICH)

My name is Jana Kittnerová and I am a PhD student, Republic. From January 13, 2018 to April 15, 2018, I Germany within CEBAMA Mobility Measures, related to her work within CEBAMA WP2, radionuclide retention by high-pH concrete. The main goal of this mobility measure was to study the adsorption of Mo (as molybdate) onto specific aluminate phases representative for hydration products in cementitious materials, namely AFm and AFt and mixtures thereof, containing different anions (i.e. carbonate and sulfate). The solid phases synthesized in her home lab in Spain were characterized in JUELICH by various spectroscopic and microscopic techniques including XRD, SEM-EDX, FTIR, and RAMAN as well as by TG-DSC. The uptake kinetics of molybdate by the various AFm/AFt mixtures were investigated in specifically designed batch sorption experiments using equilibrated solid/liquid mixtures for up to 16 days under anoxic and CO₂ free conditions in a glove box (Ar 99.99 %). A

Marta López García (AMPHOS 21 / JUELICH)

In May/June 2018, Marta López-García, postdoctoral researcher at AMPHOS21, Barcelona, Spain, spent 2 months as guest scientist at Forschungszentrum Jülich (JUELICH), Germany, in the frame of a CEBAMA Mobility Measure, related to her work within CEBAMA WP2, radionuclide retention by high-pH concrete. The main goal of this mobility measure was to study the adsorption of Mo (as molybdate) onto specific aluminate phases representative for hydration products in cementitious materials, namely AFm and AFt and mixtures thereof, containing different anions (i.e. carbonate and sulfate). The solid phases synthesized in her home lab in Spain were characterized in JUELICH by various spectroscopic and microscopic techniques including XRD, SEM-EDX, FTIR, and RAMAN as well as by TG-DSC. The uptake kinetics of molybdate by the various AFm/AFt mixtures were investigated in specifically designed batch sorption experiments using equilibrated solid/liquid mixtures for up to 16 days under anoxic and CO₂ free conditions in a glove box (Ar 99.99 %). A

Enrique Rodríguez Cañas (UAM / BRGM)



The mobility measure UAM-BRGM was planned using the methodologies developed by S. Gabon One unaltered block of FEBEX bentonite/concrete CEBMAT (M.J. Turrero) and Negra (P. Robert). This in order to achieve fully access even to the smec can be done by autoradiography. It came evident that there is a porous bentonite contact. This is presumably related to the initial quality of the s Geboreau and J. Cuevas (UAM) was following at BRGM the acquisition Cameca SX Five EPMA microscope equipped with five wavelength disp.


Aku Itälu (VTT / AMPHOS 21)



PHD student and research scientist Aku Itälu of VTT visited Amphos 21 in Barcelona, Spain during the period of 12-18.2.2018 for cooperation with CEBAMA WP3 on modelling issues. The host was Andrea Isart from Amphos 21 who is also the WP3 leader. On this trip Itälu presented AMPHOS some of the CEBAMA WP1 experimental results by VTT as well the CSH model developed at VTT for CSH dissolution. The model was further tested together with Andrea Isart and the complexity of the model was also simplified. Also some comparison between PHREEQC and GEM-Selektor was done.

Stephan Rohmen (JUELICH / PSI)


PHD student Stephan Rohmen of Forschungszentrum Jülich (JUELICH) spent two weeks at the Paul Scherrer Institute (PSI) in Villigen, Switzerland between 19.02.2018 and 02.03.2018 within the frame of the mobility measures of the CEBAMA project, related to CEBAMA WP3, Interpretation & modelling. His PhD studies, co-supervised by André Isart from AMPHOS21 and Guido Deesmann from JUELICH are focused on the development and application of a pore-scale model for the simulation of degradation processes occurring in cementitious materials (e.g. calcium leaching), to get further insights into the effects of chemical and mineralogical changes in cementitious barrier materials on its transport properties. During his stay at PSI he had the possibility to extend collaborations with other groups contributing to WP3 and exchange experiences with other researchers in the domain of pore-scale reactive transport modelling. Discussions with experts in pore-scale reactive transport modelling helped to improve the Lattice-Boltzmann based reactive transport code developed within CEBAMA called IPP. These include the usage of input data from cement hydration modelling, the implementation of a multiscale effective medium approach to model the diffusivity of C-S-H phases, or approaches to model C-S-H as binary or quaternary solid solutions. In addition, a benchmark activity to compare the results of IPP against another reactive transport code (Vantira) has been started. Stephan was also able to attend to the 8th International reactive transport PhD workshop & CEBAMA PhD meeting which took place during his stay at PSI. The outcome and the experiences gained during his mobility measure to visit PSI will enhance the capabilities of IPP and allow for application of IPP to simulation of experiments performed within CEBAMA WP1, thus providing for an enhanced understanding of the coupling between chemical alteration processes in cementitious materials and



Knowledge Management



Knowledge Management



Deliverables


Status of deliverables showed in WP summary presentations



WP4 deliverables to be submitted:

- D4.14: Interaction with non-scientific stakeholders
- D4.15: Final project reporting
- D4.16: Press release
- D4.17: List of mobility measures
- D4.18-19: Minutes and Proceedings of Final WS
- D4.20: Relevance of Cebama for the Safety Case


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Knowledge Management



Knowledge Management

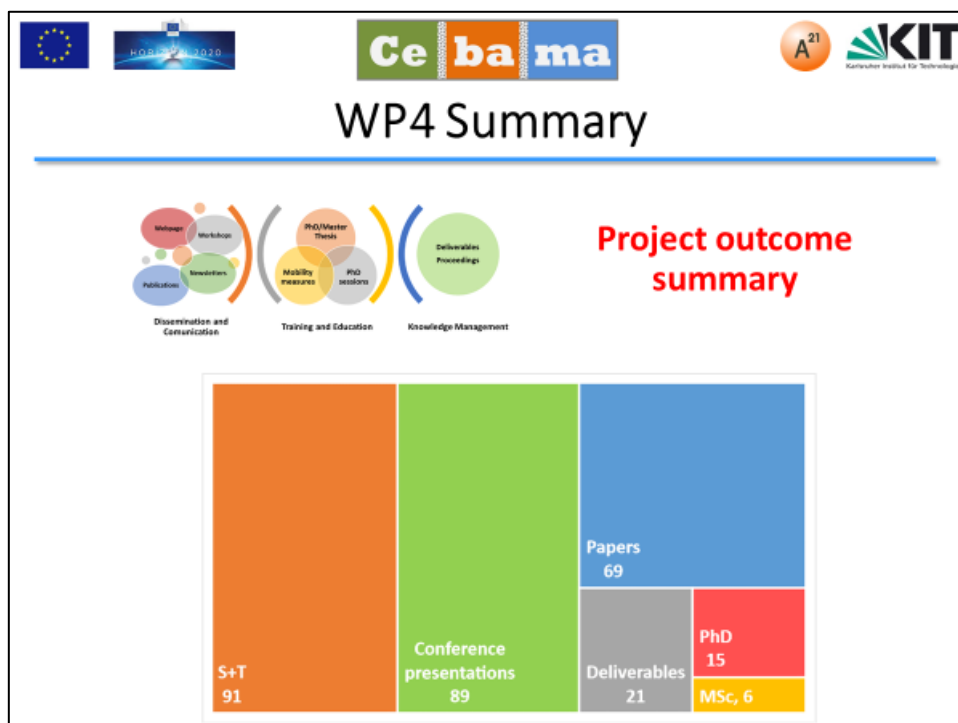
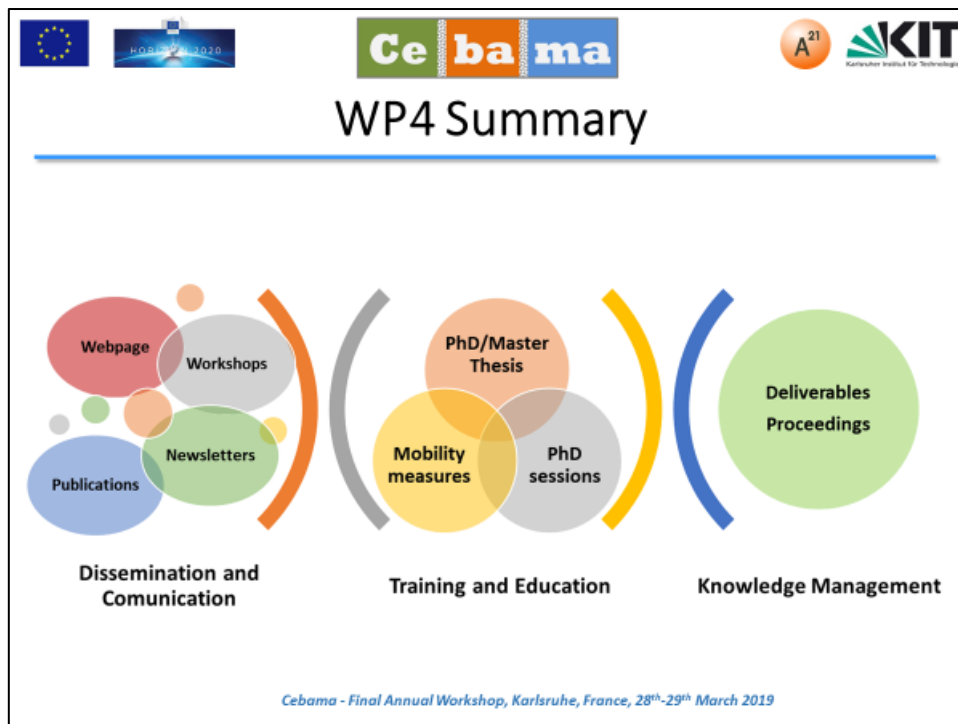
Proceedings

The workshop proceedings to be published at KIT-Scientific publishing will be openly accessible and can be downloaded free of charge at the project WEB page <http://www.ksp.kit.edu>.

Contents FWS Proceedings




- Introduction by CT
- Work summaries by WP leaders
- 3 • Technical Summary of work by each partner (survey)
- Planning of **submission**: May-June 2019

Cebama - Final Annual Workshop, Karlsruhe, France, 28th-29th March 2019








Appendix 3: End-Users Group Feed-Back on the Final CEBAMA Workshop (S. Ben Hadj Hassine, ONDRAF/NIRAS)



End-Users Feedback

4th CEBAMA Workshop

Cebama - Fourth Annual Workshop, Karlsruhe, Germany, 28th-29th Germany 2019



General Comments

The End-Users would like to thank the ExCom and specifically our host KIT for the quality of this 4th Workshop and the smooth running of the expected agenda.

All EUG members were represented during this second workshop:

- ANDRA (Pierre Henocq)
- COVRA (Erika Neeft)
- ENRESA (Miguel Angel Cuñado)
- NAGRA (Lukas Martin)
- ONDRAF/NIRAS (Seif Ben Hadj Hassine)
- POSIVA (Marja Vuorio)
- RWM (Amy Shelton)
- SKB (Per Martensson)
- SURAO (Lucie Hausmannova)

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General Comments

- Having one single presentation for each one of the WP summarizing all of the produced results had a strong added value to the last WS.
- For the next projects, we are highly in favor of more of these presentations with integrated and synthesized results.
- Combining the CEBAMA and the “Mechanisms & modelling of waste/cement interactions” workshops was a great initiative that gave more visibility to the CEBAMA project and more exchanges with the scientific community.
- The PhD students session provided a nice opportunity to the young scientists and the presentations were of good quality. The CEBAMA project was a meaningful opportunity for all of the involved students.

Cebama - Fourth Annual Workshop, Karlsruhe, Germany, 28th-29th Germany 2019



Main Conclusions

- The presentation gave an overview of the significant work that was accomplished during the CEBAMA project and this was highly appreciated.
- WP1 addressed phenomenological behavior of a variety of relevant materials and provided valuable results. Although some of the outlined conclusions were too generic and require more specific context information to be correctly interpreted (e.g. low-pH cements are useless).
- WP2 provided important data with respect to initially identified knowledge gaps (e.g. Be). The relevance and the applicability for the time scales longer than the lab tests have yet to be better assessed.
- WP3 has greatly benefited of the CEBAMA project in terms of exchanges between the different participants and improvements of the modelling tools. More applications of these models to the WP1 systems and experiments would have been appreciated.

Cebama - Fourth Annual Workshop, Karlsruhe, Germany, 28th-29th Germany 2019



Main Conclusions

- In answer to the needed assessment of the added value of the CEBAMA project to the Safety Case and Performance Assessment in the respective End-Users countries:
 - The different contexts between the 9 End-Users, the absence of Safety Cases for some of them and the unpredictable evolution of the contexts makes the task very difficult to achieve;
 - The relevance of the results of the CEBAMA project and their added value to the SC are yet to be evaluated in the future but little can be said at the moment;
 - Whether it is a direct use of obtained values or a phenomenological description of the interface, the End-Users agree that the accomplished work so far will eventually have its applications.

Cebama - Fourth Annual Workshop, Karlsruhe, Germany, 28th-29th Germany 2019



Main Conclusions

- The collaborations between the participants and the WP was fruitful. However, although WP1 and WP2 fed significant data to WP3, the support of WP3 to WP1 and WP2 lacked.
- For future projects, the role of the End-Users could be improved:
 - The involvement of the End-Users was very strong in the preliminary stages of the project but too little during the actual research work. More implication of the End-Users in the technical choices made would benefit the relevance and the applicability of the final outcomes;
 - The role of the End-Users should not be limited to the validation or the evaluation of the results. Integration of their feedback in the general course of the future projects during the early stages of the research work would benefit all parties.
- All End-Users agree on the extensive amount of work that have been accomplished in the past 4 years. Thank you for making CEBAMA happen!

Cebama - Fourth Annual Workshop, Karlsruhe, Germany, 28th-29th Germany 2019